



AFCTN Report 94-115

AFCTB-ID
94-115



Technical Raster Transfer Using:

**Rockwell Internatinal's Rocketdyne
Division Data Supporting:**



**HQ AFMC/ENCT's CALS
Evaluation and Integration Office**



**MIL-STD-1840A &
MIL-STD-1840B**



MIL-R-28002A (Raster)

Quick Short Test Report

17 August 1994



Prepared for
Electronic Systems Center
Air Force CALS Program Office
HQ ESC/AV-2
4027 Colonel Glenn Hwy Suite 300
Dayton OH 45431-1672

19960606 103

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Using:

Rockwell International's Rocketdyne Division Data

Supporting:

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MIL-R-28002A (Raster)

Quick Short Test Report

23 August 1994

Prepared By

Air Force CALS Test Bed
Wright-Patterson AFB, OH 45433

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Air Force CALS Test Bed

Notification of Test Results

17 August 1994

This notice documents the results of an Air Force CALS Test Bed (AFCTB) Quick Short Test Report (QSTR) evaluation of data submitted by:

Rockwell International's Rocketdyne Division

Identified as follows:

| | |
|-----------------|---|
| Title: | Technical Raster Transfer |
| Program: | CALS Evaluation & Integration Office |
| Program Office: | HQ AFMC/ENCT |
| Contract No.: | N/A |
| QSTR No.: | AFCTB-ID 94-115 |

Received on the following media: **Electronic Transfer**

The results of the QSTR evaluation are as follows:

| | |
|-----------------------|-------------|
| MIL-STD-1840A & 1840B | Pass |
| Standard: | |
| MIL-STD-1840A & 1840B | Pass |
| Media Format: | |
| MIL-D-28000A IGES: | N/A |
| MIL-M-28001B SGML: | N/A |
| MIL-R-28002A Raster: | Pass |
| MIL-D-28003 CGM: | N/A |

Formal results with associated disclaimer are documented and available from the AFCTB.

**Air Force CALS Test Bed
HQ ESC/AV-2P
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1. Introduction

1.1 Background

The Department of Defense (DoD) Air Force Continuous Acquisition and Life-cycle Support (CALS) Test Network (AFCTN) is conducting tests of the military standard for the Automated Interchange of Technical Information, MIL-STD-1840B, and its companion suite of military specifications. The AFCTN is a DoD sponsored confederation of voluntary participants from industry and government managed by the Electronic Systems Center (ESC).

The primary objective of the AFCTN is to evaluate the effectiveness of the CALS standards for technical data interchange and to demonstrate the technical capabilities and operational suitability of those standards. Two general categories of tests are performed to evaluate the standards; formal and informal.

Formal tests are large and comprehensive, which follow a written test plan, require specific authorization from the DoD, and may take months to prepare, execute, and report.

Informal tests are quick and short, used by the AFCTN technical staff, to broaden the testing base. They include representative samples of the many systems and applications used by AFCTN participants. They also allow the AFCTN staff to gain feedback from many industry and government interpretations of the standards, to increase the base of participation in the CALS initiative, and respond to the many requests for help that come from participants. Participants take part voluntarily, benefit by receiving an evaluation of their latest implementation (interpretation) of the standards, interact with the AFCTN technical staff, gain experience using the standards, and develop increased confidence in them. The results of informal tests are reported in Quick Short Test Reports (QSTRs) that briefly summarize the standard(s) tested, the hardware and software used, the nature of the test, and the results.

1.2 Purpose

The purpose of the informal test, reported in this QSTR, was to analyze Rocketdyne's (a division of Rockwell Int'l) interpretation and use of the CALS standards in transferring technical Raster data. Rocketdyne used its CALS Technical Data Interchange System to produce data, in accordance with the standards, and delivered it to the AFCTN technical staff using and electronic transfer to the internet server.

Two file sets were transmitted for this test, an 1840A and an 1840B data set.

2. Test Parameters

Test Plan: AFCTB 94-115

**Date of
Evaluation:** 23 August 1994

Evaluator: George Elwood
Air Force CALS Test Bed
DET 2 HQ ESC/AV-2P
4027 Colonel Glenn Hwy
Suite 300
Dayton OH 45431-1672

**Data
Originator:** Betty Boyadjian
Rocketdyne Division, Rockwell International
6633 Canoga Ave M/S AB41
Canoga Park, CA 91304
(818) 586-4934

**Data
Description:** Technical Raster Test (2)
1 Document Declaration file
6 Raster files

**Data
Source System:**

1840

HARDWARE

SUN

SOFTWARE

AFCTN Tapetool 2.0B
AFCTN Tapetool 1.2.10

Raster

HARDWARE

SUN

SOFTWARE

SPICER IMAGEnation VME

Evaluation Tools Used:

MIL-STD-1840B (TAPE)

PC 486/50

AFCTN Tapetool v1.2.10 DOS

AFCTN Tapetool v2.0.0 (1840B)

MIL-R-28002 (Raster)

HP 735

AFCTN xrastb.hp

InterCAP X-Change v7.82

Carberry CADLeaf v4.0

SGI Indigo2

AFCTN xrastb.sgi

IGES Data Analysis (IDA) CALSView

SUN SparcStation 2

IDA IGESView v3.0

PC 486

AFCTN validg4

IDA IGESView Windows

Inset Systems HiJaak Pro

Expert Graphics RxHighlight v1.0

Standards

Tested:

MIL-STD-1840B

MIL-STD-1840A

MIL-R-28002A

3. 1840A & 1840B Analysis

3.1 External Packaging

The files arrived at the Air Force CALS Test Bed (AFCTB) via an electronic transfer to the internet server. No physical media was exchanged or evaluated.

3.2 Transmission Envelope

The electronic transfer received by the AFCTB contained MIL-STD-1840B and MIL-STD-1840A files. The files were named per the standard conventions.

3.2.1 Tape Formats

No tape was evaluated.

3.2.2 Declaration and Header Fields

No errors were found in the Document Declaration file or data file headers of either file set. This portion of the electronic transfers meets the requirements defined in CALS MIL-STD-1840A and MIL-STD-1840B.

4. IGES Analysis

No Initial Graphics Exchange Specification (IGES) files were included in this evaluation.

5. SGML Analysis

No Standard Generalized Markup Language (SGML) files were included in this evaluation.

6. Raster Analysis

Each transfer set contained six Raster files from a MIL-STD-1840A and MIL-STD-1840B data package. The Raster files were compared and found to be exact matches. The Raster evaluation was done using the MIL-STD-1840A data files.

The procedure used to create these files at Rocketdyne was as follows:

Original engineering drawing created using *CATIA*. These files were then output as HPGL files. These files were converted to CCITT G4 files using *SPICER IMAGEnation VME*. The 1840A output was generated using the AFCTB *Tapetool v1.2.10*. The 1840B output was generated using the AFCTN *Tapetool V2.0.0*. The 1840B header contained additional fields, which are not currently supported by the AFCTB Raster test tools; *xrastb* and *validg4*. All evaluations of the Raster files were done using the MIL-STD-1840A data set.

The 1840A files were read into the AFCTN *xrastb.sgi* viewing utility. No problems were encountered. It was noted that the decompressed file sizes were 10-15 megabytes. Files this large may cause problems in some systems with limited memory. The image quality was excellent. All text could be read. The SUN Sparc version of the software would not display the image due to lack of memory.

The AFCTB has several tools for viewing Raster files. These tools are not used to generate a pass/fail but to report how commercially available software can handle the files. Many of these products are used in the development of technical publications and are good indicators of usability. The use of these products is not an endorsement nor an indication of CALS capability. All operations were performed using the default settings.

The Raster files were read into Carberry's *CADLeaf* software without a reported error. All images were displayed and printed from this utility. In order to make the images acceptable, only a small section of the images could be displayed and printed.

The files were read using IDA's *CALSVIEW* without a reported error.

The files were read into IDA's *IGESView* without a reported error.

The files were read into Inset Systems' *HiJaak for Windows*. Because of the size of the files and available memory on the PC, error messages were displayed indicating a lack of memory to process the files.

No errors were reported while using InterCAP's *X-Change*. The images appeared correctly. The text size was very small, making it necessary to use the zoom function in order to view it.

The Raster files were imported into Expert Graphics' *Rx-Highlight* and displayed without any reported errors. The images were enlarged and all text was legible.

The six Raster files in these transfer sets meet the CALS MIL-R-28002A specification.

7. CGM Analysis

No Computer Graphics Metafiles (CGMs) were included in this evaluation.

8. Conclusions and Recommendations

The CALS Document Declaration file and data file headers were correct. This portion of the electronic transfers meet the CALS MIL-STD-1840A and MIL-STD-1840B requirements.

The Raster files meet the CALS MIL-R-28002A specification.

The electronic transfer sets submitted by Rocketdyne conform to the CALS MIL-STD-1840A and MIL-STD-1840B requirements.

9. Appendix A - Tapetool Report Logs

9.1 MIL-STD-1840A Data Set

9.1.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 1.2; Release 10 (0)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Sun Aug 21 12:05:29 1994

MIL-STD-1840A File Catalog

File Set Directory: C:\TT\SET013

Page: 1

| File Name | File Type | Record Format/ Length | Block Length/Total | Selected/ Extracted |
|-----------|----------------------|-----------------------------|-----------------------|------------------------|
| D001 | Document Declaration | D/00256 | 02048/000000 | Extracted |
| D001R001 | Raster | F/00128 | 02048/000000 | Extracted |
| D001R002 | Raster | F/00128 | 02048/000000 | Extracted |
| D001R003 | Raster | F/00128 | 02048/000000 | Extracted |
| D001R004 | Raster | F/00128 | 02048/000000 | Extracted |
| D001R005 | Raster | F/00128 | 02048/000000 | Extracted |
| D001R006 | Raster | F/00128 | 02048/000000 | Extracted |

Catalog Process terminated normally.

9.1.2 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 1.2; Release 10 (0)

Standards referenced:

MIL-STD-1840A (1987) - Automated Interchange of Technical Information

Sun Aug 21 12:05:30 1994

MIL-STD-1840A File Set Evaluation Log

File Set: SET013

Found file: D001

Extracting Document Declaration Header Records...

Evaluating Document Declaration Header Records...

srcsys: Rocketdyne Div, Rockwell Intl, 6633 Canoga Ave, Canoga Park, CA 91303

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)

srcrelid: NONE

chglvl: ORIGINAL

dteis: 19940819

dstsys: CALS Evaluation and Integration Office, %CALS Digital Standards Office, HQ

AFMC/ENCT, Wright-Patterson AFB, OH 45433-50

dstdocid: Engineering Drawing #R0018020

dstrelid: NONE

dtetrn: 19940819

dlvacc: NONE

filcnt: R6

ttlcls: UNCLASSIFIED

doccls: UNCLASSIFIED

doctyp: Product Data

docttl: SSME Manifold, Details and Views

Found file: D001R001

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)

dstdocid: Engineering Drawing #R0018020

txtfilid: NONE

figid: NONE

srcgph: NONE

doccls: UNCLASSIFIED

rtype: 1

rorient: 000,270

rpelcnt: 015051,005422

rdensty: 0300

notes: NONE

Found file: D001R002

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: UNCLASSIFIED
rtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensty: 0300
notes: NONE

Found file: D001R003

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: UNCLASSIFIED
rtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensty: 0300
notes: NONE

Found file: D001R004

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: UNCLASSIFIED
rtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensty: 0300
notes: NONE

Found file: D001R005

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
txtfilid: NONE
figid: NONE

srcgph: NONE
doccls: UNCLASSIFIED
rtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensty: 0300
notes: NONE

Found file: D001R006

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
txtfilid: NONE
figid: NONE
srcgph: NONE
doccls: UNCLASSIFIED
rtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensty: 0300
notes: NONE

Evaluating numbering scheme...

No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...

No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D001.

No errors were encountered in this File Set.

MIL-STD-1840A File Set Evaluation Complete.

9.2 MIL-STD-1840B Data Set

9.2.1 Tape Catalog

CALS Test Network Catalog Evaluation - Version 2.0; Release 1 (C)

Standards referenced:

MIL-STD-1840B (1992) - Automated Interchange of Technical Information

ANSI X3.27 (1987) - File Structure and labeling of Magnetic Tapes
for Information Interchange

ANSI X3.4 (1986) - Coded Character Sets - 7 Bit ASCII

Sun Aug 21 13:19:12 1994

MIL-STD-1840B File Catalog

File Set Directory: C:\TAPEB\SET003

Page: 1

| File Name | File Type | Record Format/ Length | Block Length/Total | Selected/ Extracted |
|-----------|----------------------|-----------------------------|-----------------------|------------------------|
| D001 | Document Declaration | F/00128 | 02048/000000 | Extracted |
| D001R001 | Raster | F/00128 | 02048/000000 | Extracted |
| D001R002 | Raster | F/00128 | 02048/000000 | Extracted |
| D001R003 | Raster | F/00128 | 02048/000000 | Extracted |
| D001R004 | Raster | F/00128 | 02048/000000 | Extracted |
| D001R005 | Raster | F/00128 | 02048/000000 | Extracted |
| D001R006 | Raster | F/00128 | 02048/000000 | Extracted |

Catalog Process terminated normally.

9.2.2 Tape File Set Validation Log

CALS Test Network File Set Evaluation - Version 2.0; Release 1 (C)

Standards referenced:

MIL-STD-1840B (1992) - Automated Interchange of Technical Information

Sun Aug 21 13:19:12 1994

MIL-STD-1840B File Set Evaluation Log

File Set: SET003

Found file: D001

version: MIL-STD-1840B, 0, 19921103

srcsys: Rocketdyne Div, Rockwell Intl, 6633 Canoga Ave, Canoga Park, CA 91303

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)

srcrelid: NONE

chglvl: ORIGINAL, 0, 0, 19940819/1032:54

dteisu: 19940819/1032:54

dstsys: CALS Evaluation and Integration Office,%CALS Digital Standards Office, HQ
AFMC/ENCT,Wright-Patterson AFB, OH 45433-50

dstdocid: Engineering Drawing #R0018020

dstrelid: NONE

dtetrn: 19940819/1032:54

dlvacc: NONE

filcnt: R6

ttlcls: UNCLASSIFIED

doccls: UNCLASSIFIED

doctyp: IBM VM CATIA 3.2.6 Drawing

doctl: SSME Manifold, Details and Views

transactyp: PRODUCT DATA

Found file: D001R001

specversion: NONE

srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)

dstdocid: Engineering Drawing #R0018020

moduleid: NONE

dtype: 1

rorient: 000,270

rpelcnt: 015051,005422

rdensty: 0300

didid: NONE

doccls: UNCLASSIFIED

notes: NONE

Found file: D001R002

specversion: NONE
srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
moduleid: NONE
dtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensty: 0300
didid: NONE
doccls: UNCLASSIFIED
notes: NONE

Found file: D001R003

specversion: NONE
srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
moduleid: NONE
dtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensty: 0300
didid: NONE
doccls: UNCLASSIFIED
notes: NONE

Found file: D001R004

specversion: NONE
srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
moduleid: NONE
dtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensty: 0300
didid: NONE
doccls: UNCLASSIFIED
notes: NONE

Found file: D001R005

specversion: NONE
srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
moduleid: NONE

dtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensty: 0300
didid: NONE
doccls: UNCLASSIFIED
notes: NONE

Found file: D001R006

specversion: NONE
srcdocid: CATIA Drawing #R0018020, 6 sheets (SSME)
dstdocid: Engineering Drawing #R0018020
moduleid: NONE
dtype: 1
rorient: 000,270
rpelcnt: 021639,005422
rdensty: 0300
didid: NONE
doccls: UNCLASSIFIED
notes: NONE

Evaluating numbering scheme...
No errors were encountered during numbering scheme evaluation.
Numbering scheme evaluation complete.

Checking file count...
No errors were encountered during file count verification.
File Count verification complete.

No errors were encountered in Document D001.

No errors were encountered in this File Set.

MIL-STD-1840B File Set Evaluation Complete.

10. Appendix B - Detailed Raster Analysis

10.1 File D001R001

10.1.1 Output CADLeaf

ACCUMULATION.

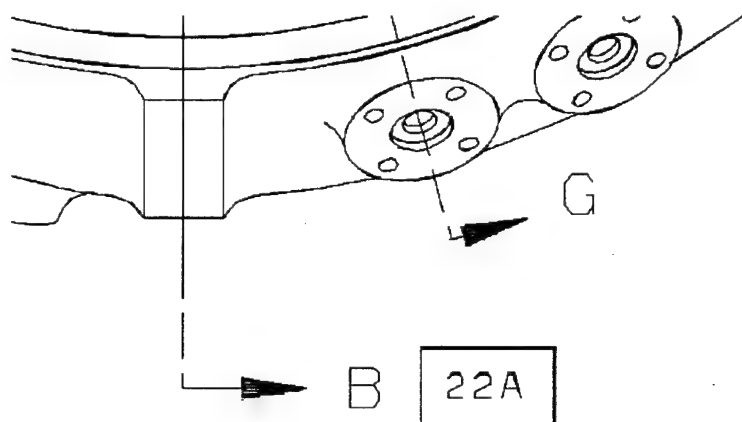
COORDINATE WELD FITUP RE
FUEL BOWL LINER DWG ROC
FUEL BOWL FAIRED INLETS

BLEND WELD SMOOTHLY WIT
SURFACES. NO NOTCHES OF
PERMISSIBLE. .10 RADIUS

CRITICAL GSE INTERFACE

10.2 File D001R002

10.2.1 Output CADLeaf



111, -331

121, -261

101 (1/3) SHELL 1 REQD. ON -481

91, -281 (1/7) SHELL 1 REQD. ON -471

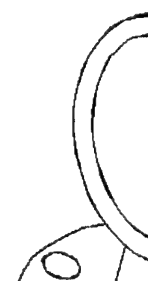
61 (1/3) SHELL 1 REQD. ON -461

51 (1/7) SHELL 1 REQD. ON -441

11, -131 (1/3) SHELL 1 REQD. ON -491

01, -121 (1/9) SHELL 1 REQD. ON -321, -341
-361, -401

11, -141



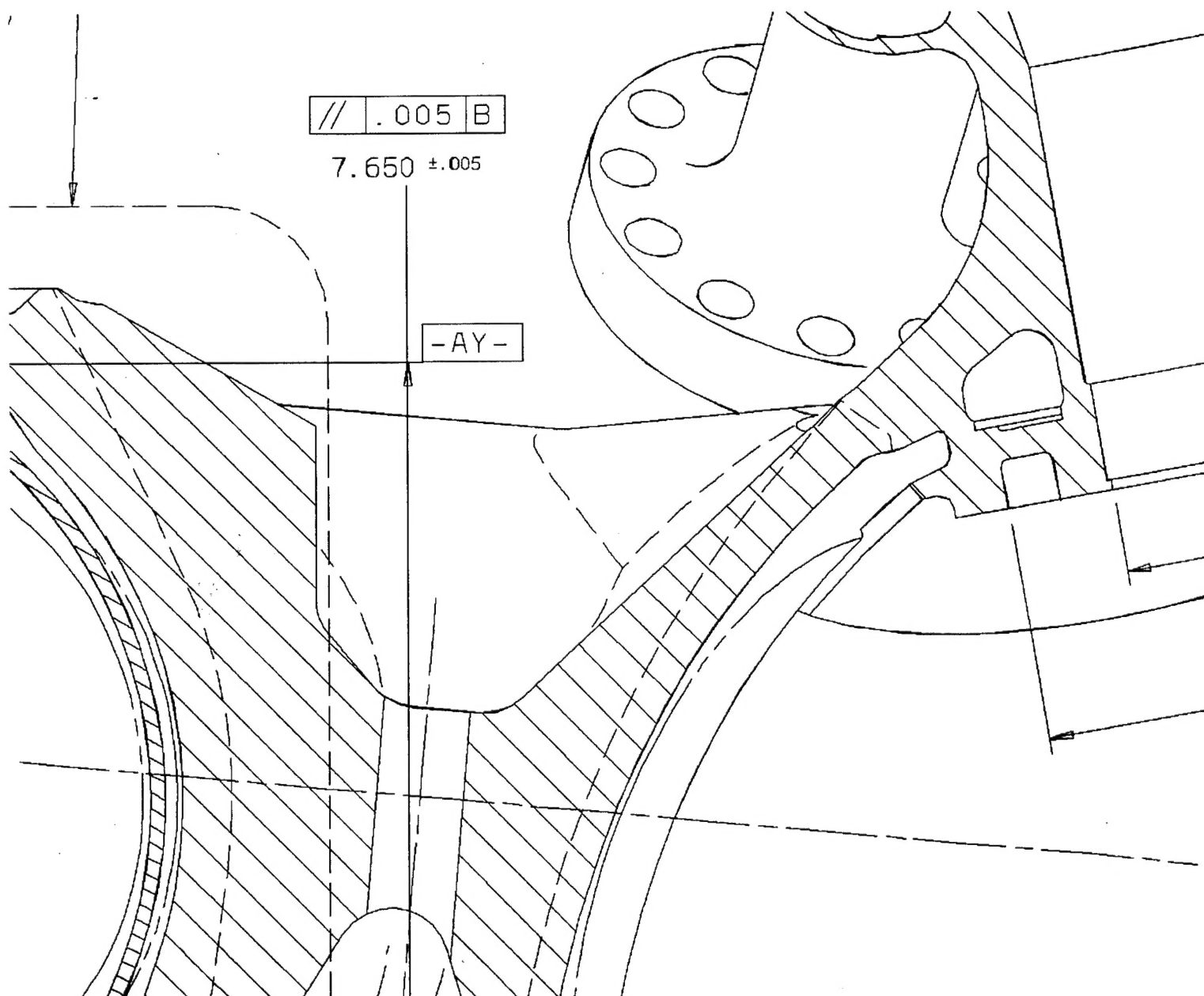
1

CG1D REF.

CG1D REF

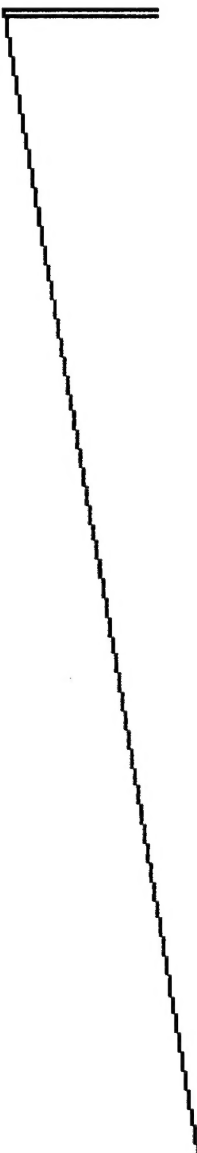
10.3 File D001R003

10.3.1 Output CADLeaf



10.4 File D001R004

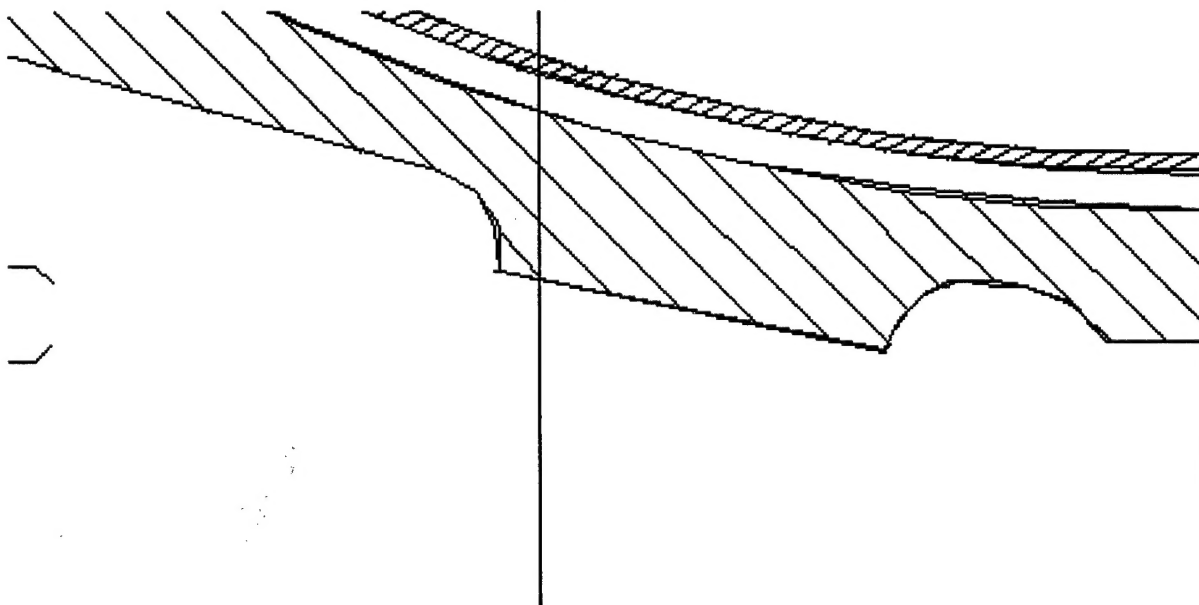
10.4.1 Output CADLeaf



FLAT BOTTOM TAF
✓ Ø. 560 X 90°
. 5625-18 UNJF-
PD . 5264 +. 004
-. 000
PER MIL-S-887C
1. 15 MIN FULL
60 HOLES EQ SF

10.5 File D001R005

10.5.1 Output CADLeaf



.. 10 MIN GAP TO BE
MAINTAINED DURING
WELD FITUP.
2 PL ALL AROUND

10.6 File D001R006

10.6.1 Output CADLeaf

POINT A IS CENTER OF MATI
URFACE AND $\varnothing 3.550$ ON ROO
NLET FLANGE

23 10 RD 1 1 1 - 4 0 0 9 - 6 8 3 6 B

56 RD 1 5 3 - 5 0 0 4 - 1 0 0 8 W,

RD 1 5 3 - 1 0 0 2 - 0 0 0 8 W,

58 RD 1 1 4 - 8 0 1 4 - 0 0 0 8 NI